

CHAPTER 8. FRAMEWORK FOR FORMULATING THE MASTER PLANS

FRAMEWORK OVERVIEW

Many flood damage reduction measures lend themselves to incorporation of specified ecosystem restoration features. In addition, many restoration measures can be configured to help reduce flood damages. The goal of this study is to identify opportunities to address both flood damage reduction and associated ecosystem restoration.

This approach is innovative. There will, out of necessity, be a number of programmatic and policy questions to be resolved. This framework is based on the concept that benefits will be evaluated on a system-wide basis, that costs will be allocated between multiple project purposes, and that funding from various programs may be available for project implementation. Although the extent of the Corps' and/or The Reclamation Board's cost-shares may be limited by existing laws, the formulation process will focus on broadly-supported system-wide solutions, and not on projects that merely maximize the Corps' and/or The Reclamation Board's financial participation.

The Sacramento and San Joaquin River systems have been divided into unique, but very interdependent, reaches which correspond generally to the problems of flooding and related environmental resources. The framework described in this chapter provides a systematic approach to formulate plans to effectively address these problems. Several regional programs exist to specifically address ecosystem problems in the valleys; however, there is no comprehensive program to address the issue of flooding. To optimize the work of other programs without duplicate efforts, this framework will identify target levels for flood damage reduction. The associated ecosystem restoration will consider the goals of on-going restoration programs and will be incorporated at each formulation step.

Based on an initial assessment of the system, discussions with local agencies, and the complexity of developing an overall plan, the proposed framework includes three system-evaluation steps. Each step will help to identify system limitations, hydraulic constraints, and desired system performance. Using this information and the goals of on-going restoration programs, a concise array of potential multi-objective solutions will be developed. The three evaluation steps include:

- Evaluate the originally intended flood management function.
- Identify system constraints.
- Address residual flood risk.

Once these evaluation steps are complete, the cause of the flooding problems will become more apparent. Opportunities to solve these problems, and ways to share costs with other programs, will begin to emerge. The formulation of combinations of measures into complete

projects will be accomplished through public support and input. Through this process, partnerships will be formed to fund and construct the proposed projects. The strategy for project implementation is discussed in Chapter 9.

FRAMEWORK DESCRIPTION

PUBLIC AND STAKEHOLDER INVOLVEMENT

Public and of stakeholders involvement is the foundation of the development of the master plans. Initial public and stakeholder outreach documented during Phase I of this study includes information regarding:

- The purpose, goals, and objectives of the Comprehensive Study;
- The basic planning and project implementation framework and schedule;
- A detailed description of the problems and opportunities associated with flooding and loss of environmental values.

Phase II will undertake more information-gathering and NEPA/CEQA scoping from the public and stakeholders to aid with plan development. The study team needs to accomplish the following tasks with the help of these parties:

- Identify site-specific problems and physical conditions;
- Refine the planning objectives for each stage and river reach;
- Identify linkages with other resource development programs;
- Establish desired system performance and flood risk targets;
- Identify a commonly acceptable array of structural and non-structural measures for flood damage reduction and associated ecosystem restoration; and
- Build support for specific measures and plans.

ESTABLISH THE EVALUATION BASELINE

For the evaluation of measures, the following strategy will be used:

The baseline will be the future-without action condition. Using hydrologic and hydraulic models, the ecosystem function model, and related analyses, the relevant base conditions will be established. Determination of the hydraulic capacities within the existing flood management system in the Sacramento and San Joaquin River basins is critical. Consideration of channel roughness and geometry, as well as geotechnical conditions, will be used to establish the baseline for reliable hydraulic capacity throughout the system. Qualitative and quantitative descriptions

of the environmental conditions, and the means to measure likely changes, will be needed to evaluate the various restoration features. The baseline will include the existing level of flood risk, expected future flooding scenarios, and resultant damage.

SYSTEM EVALUATION STEPS

Based on initial assessments of the flood management system, and public and stakeholder input, the following three evaluation steps are proposed for modeling and analyses. Each step will identify a full array of measures, including ecosystem restoration measures that also reduce flood damages or can be integrated with the flood damage reduction measures.

- **Step 1 - Evaluate the Originally Intended Flood Management Function** – The goal for this stage will not necessarily be to examine the original project configuration and/or design, but will examine the broad intended flood management purpose of the system and identify additional ways to meet that purpose. The originally intended flood management function will be identified for each element of the system. Design capacities and system functions will be compared with the baseline condition and differences will be identified. Based on these findings, measures that include both structural and nonstructural components will be developed for further analysis.

- **Step 2 - Identify System Constraints** – Beyond the analysis in step 1, this step will identify limiting factors in the flood management system. Recent hydrologic data suggest that restoring the original system function may not adequately reduce the risk of large flood damages. Some reasonable modifications to existing features may significantly improve the flood management capability. Based on continued modeling and evaluation, measures that include both structural and nonstructural components will be developed and possibly combined with the measures from step 1.

- **Step 3 - Address Residual Flood Risk** – Given changes in land use, hydrology, and project development, different sub-reaches with similar land uses and infrastructures may be afforded very different levels of flood protection. Based heavily on public and stakeholder input, step 3 will identify appropriate levels of flood risk by land use and infrastructure within each sub-reach. Based on continued stakeholder input and system modeling, measures that include both structural and nonstructural components will be developed consistent with the identified protection levels.

FORMULATE COMPLETE PROJECTS AND DESCRIBE OUTPUTS

Using information developed during the evaluation of the existing system and the goals of the restoration programs, complete, integrated projects will be formulated throughout the basins. These projects will be evaluated in terms of cost-effectiveness using broad parameters,

such as dollars per habitat unit or net NED benefits. The formulation process will identify potential cost-sharing opportunities with the CVPIA implementation, CALFED, the SB1086 Program, and the San Joaquin River Management Program.

The evaluation of potential projects will include various kinds of outputs. Economic analyses will address both NED and regional economic development (RED). Restoration output may include acres of habitat, increase in habitat units, and /or increases in natural processes. Once project outputs are identified, project costs can be allocated among the project purposes. This cost allocation will be key to the sharing of costs between programs and local sponsors.